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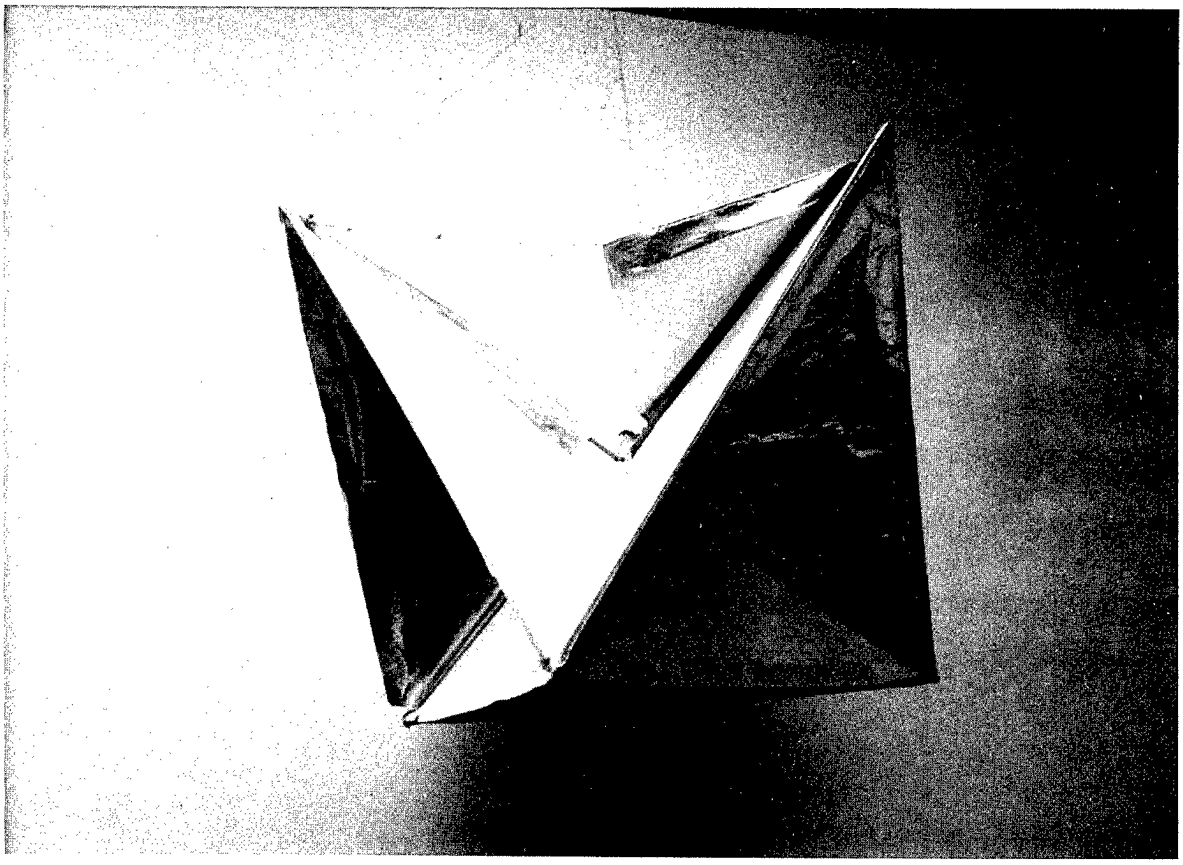
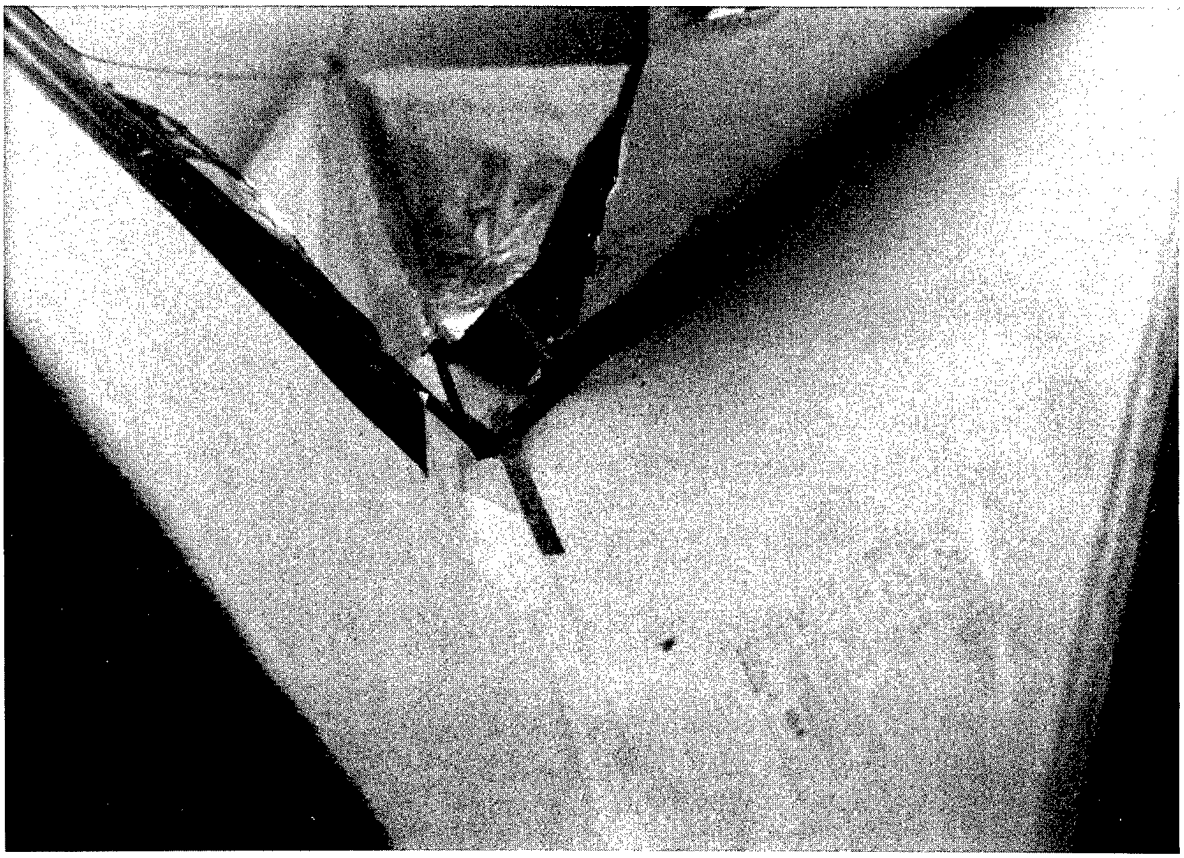
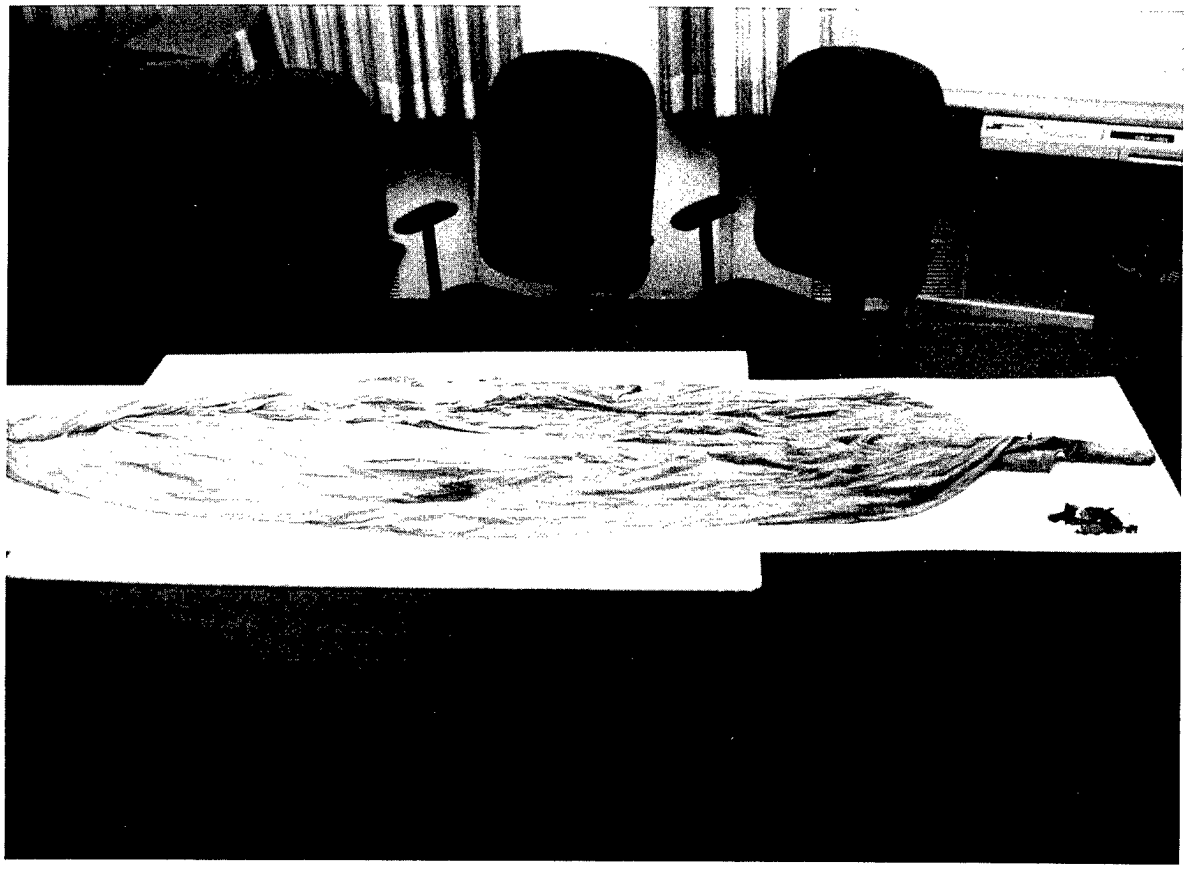
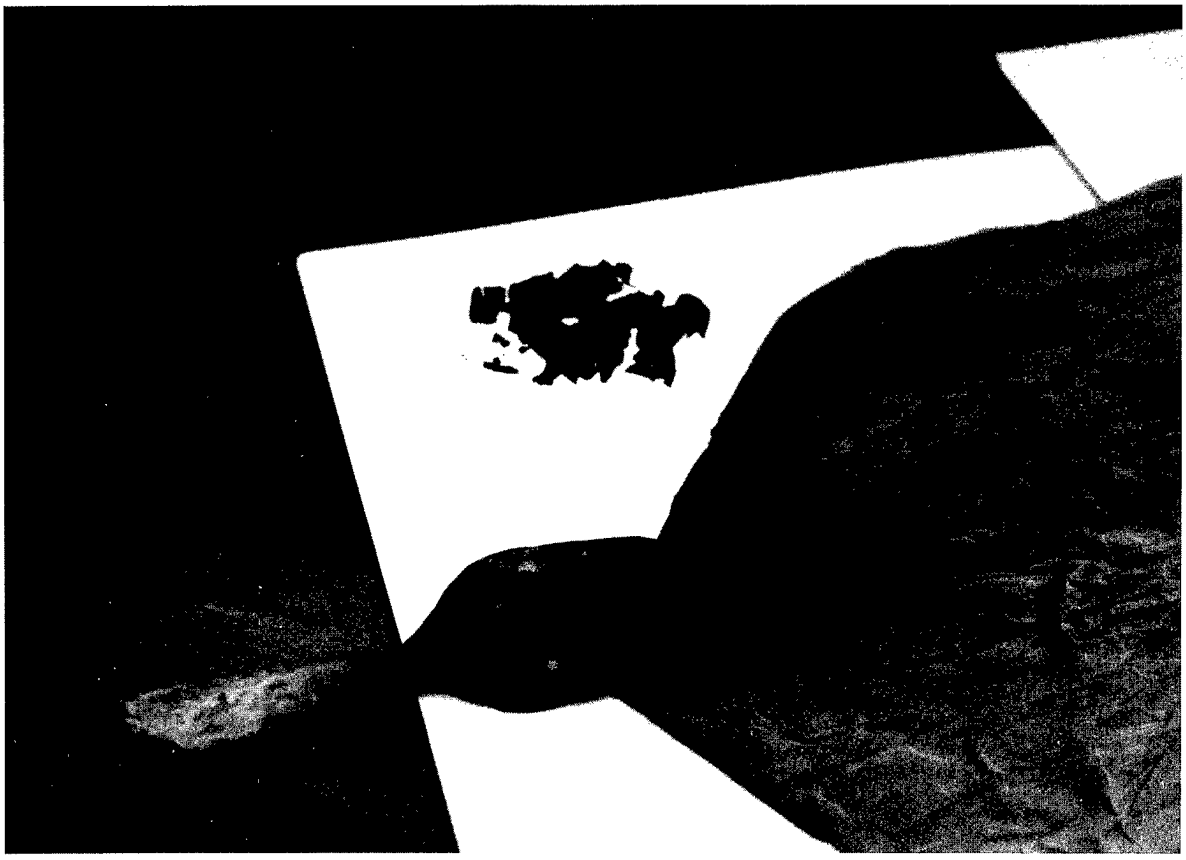
Photographs
ML–307C/AP Device with Vintage
Neoprene Balloons and Debris









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Synopsis of Balloon Research Findings

1st Lt James McAndrew

DEPARTMENT OF THE AIR FORCE
WASHINGTON DC 20330-1000

OFFICE OF THE SECRETARY

JUL 27 1994

MEMORANDUM FOR SAF/AAZ
ATTENTION: Colonel Richard L. Weaver

FROM: SAF/AAZD
1720 Air Force Pentagon
Washington, DC 20330-1720

SUBJECT: Report of Findings on Balloon Research

The following report is submitted in support of findings developed as a result of research efforts conducted at your request in support of the General Accounting Office (GAO) audit that focused on obtaining information relative to the so-called "Roswell Incident."

Previously you were separately provided a list of the locations and records searched in regard to that endeavor. This is in addition to other materials and briefings previously provided. The focus of this paper is to concentrate on those findings developed regarding balloon operations that were taking place in New Mexico during the time frame in question.

The following was compiled from records reviews and in some case, interviews with participants. Where appropriate, copies of the source documents used are provided as attachments. In the case of interviews or other references that are attached to the main report, these will be reflected in the footnotes, but not attached here.

JAMES MCANDREW, 1LT, USAFR
Declassification and Review Officer
SAF/AAZD

THE ROSWELL INCIDENT

On July 7, 1947, W.W. (Mac) Brazel, a rancher from approximately 75 miles northwest of Roswell, NM, contacted the local sheriff and reported that some metallic debris had come to rest on the ranch on which he worked near the town of Corona, NM. This was during the "UFO Wave of 1947," and he told the sheriff that he thought this debris may be part of a "flying disc."[1] The sheriff contacted Roswell (Army Air Field) AAF, which in turn sent intelligence officer, Maj Jesse Marcel, and two Counterintelligence Corps Agents, Capt Sheridan Cavitt and MSgt Lewis Rickett, to evaluate the debris. The officers collected a portion of the material and brought it back to Roswell AAF on the evening of July 7.[2] The following day, the Public Information Office released a statement saying that the Army Air Forces had recovered a flying disc. This press release was provided to local newspapers who sent it out to wire services. Meanwhile, Brig Gen Roger Ramey, Eighth Air Force Commander, ordered that the debris be flown to Eighth Air Force Headquarters at Fort Worth AAF, TX, for his personal inspection. Upon viewing the debris, he and his staff recognized parts which looked similar to a weather balloon. He then summoned the base weather officer, who identified the debris as the remnants of a weather balloon and its attached metallic radar target.[3] General Ramey then invited the local press to view and take photographs of the materials and he declared the episode to be a misunderstanding (Atch 1).

The above summarizes the previously reported information of what happened on July 7 and 8, 1947. Before now, however, a larger portion of the story was never told. Recent research indicates that the debris recovered from the ranch on July 7, 1947, *was* a weather balloon—but it was not being used strictly for weather purposes; its real purpose was to carry classified payloads for a Top Secret US Army Air Forces project. The project's classified code name was MOGUL.

The current investigation discovered that an experimental balloon project was being conducted at nearby Alamogordo Army Airfield (now Holloman AFB, NM) during the summer of 1947.[4] An examination of unclassified technical and progress reports prepared by the balloon project revealed that a highly classified program, Project MOGUL was the ultimate reason for the balloon experiments. Project MOGUL was classified Top Secret and carried a priority level of 1A.[5] *It is Project MOGUL that provides the ultimate explanation for the "Roswell Incident."*

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1. *Roswell Daily Record,* Jul 9, 1947, p. 1.
2. Intvw, Col Richard L. Weaver with Lt Col Sheridan Cavitt, USAF (Ret), May 24, 1994.
3. Intvw, Lt Col Joseph V. Rogan with Irving Newton, Jul 21, 1994.
4. Ltr, Lt Col Edward A. Doty to Mr David Bushnell, Mar 3, 1959.
5. Ltr, Brig Gen E. O'Donnell, Deputy Chief, Engineering Division, HQ AMC, to Commanding General, USAAF, subj: Change in Classification of MOGUL, Item 188–5, Jul 8, 1946.

PROJECT MOGUL

Project MOGUL was first conceived by Dr. Maurice Ewing of Columbia University, NY, and Woods Hole Oceanographic Institution, MA. Dr. Ewing had conducted considerable research for the Navy during World War II, studying, among other things, the "sound channel" in the ocean. He proved that explosions could be heard thousands of miles away with underwater microphones placed at a predetermined depth within the sound channel. He theorized that since sound waves generated by explosions could be carried by currents deep within the ocean, they might be similarly transmitted within a sound channel in the upper atmosphere. The military application of this theory was the long-range detection of sound waves generated by Soviet nuclear detonations and the acoustical signatures of ballistic missiles as they traversed the upper atmosphere. He presented his theory to General Carl Spaatz, Chief of Staff of the Army Air Forces, in the fall of 1945.[6] The project was approved, and research was begun by the scientific research agency of the US Army Air Forces (USAAF), the Air Materiel Command (AMC), early in 1946. The project was assigned to HQ AMC, Engineering Division, Electronics Subdivision, which in turn assigned the project to AMC's Watson Laboratories, Engineering Division, Applied Propagation Subdivision, located in Red Bank, NJ.

SCOPE

Project MOGUL initially focused on three areas of technology: (1) an expendable microphone, capable of detecting, at long range, low-frequency sound transmissions generated by explosions and missiles; (2) a means of telemetering these sounds to a ground or airborne receiver; and (3) a system from which to suspend the microphone and telemetering device in the upper atmosphere for an extended period of time. To meet these criteria, contracts were awarded by AMC to Columbia University (AMC contract no. W28–099–ac–82) for the acoustical equipment, and to New York University (NYU) for the development of constant-level balloons (AMC contract no. W28–099–ac– 241). After the initial contracts were awarded, Project MOGUL branched out into many areas related to the geophysical properties of the upper atmosphere, including radiowave propagation, radar propagation, ionospheric physics, solar physics, terrestrial magnetism, meteorological physics, and weather forecasting. Considerable resources were devoted to Project MOGUL which included numerous bomber and transport aircraft and two oceangoing vessels. At one point the staff, exclusive of contractors, numbered over 100 persons. To accommodate this sensitive, high-priority project, facilities of the secluded Oakhurst Field Station of Watson Laboratories were used. Balloon operations associated with Project Mogul were conducted at various locations throughout the United States and the Pacific, the latter in reference to acoustical detection research associated with the Sandstone atomic tests at Entiwetok Atoll in April and May 1948.[7]

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6. Rprt, Maurice Ewing for General Carl Spaatz, "Long Range Sound Transmission in the Atmosphere," n.d.

7. Rprt, HQ Fitzwilliam Fwd, "Sonic Balloon Test Kwajalein," May 17, 1948 (hereafter "Sonic

By December 1948, serious concerns had arisen regarding the feasibility of the project as first conceived. Even though the principle on which the project was based was determined to be sound, questions concerning cost, security, and practicality were discussed that ultimately led to the disbandment of the project, and Project MOGUL as first conceived was never put into operational use. However, MOGUL did serve as the foundation for a comprehensive program in geophysical research from which the USAF and the scientific community have benefited to the present time. These benefits included constant-level balloon technology, first developed by NYU for Project MOGUL.

WATSON LABORATORIES

The organizational structure of Watson Laboratories Applied Propagation Subdivision, which was established primarily for MOGUL, as it appeared in January 1947, is shown in Attachment 2. Over the course of the project, MOGUL had three military project officers, or "chiefs": Maj Robert T. Crane, spring 1946–July 1946; Col Marcellus Duffy, August 1946–January, 1947; and Capt Albert C. Trakowski, January 1947–May 1949. Major Crane had been personally recommended by Dr. Ewing, originator of the project, but by June of 1947, MOGUL had not met the expectations of HQ USAAF, and Colonel Duffy replaced Major Crane.[8] Colonel Duffy was a respected, highly capable career Army Air Forces officer. During World War II, Colonel Duffy had reported directly to General Hap Arnold, Chief of Staff USAAF, as the Army Air Forces Liaison Officer to the US Army Signal Corps, with primary duties for securing meteorological equipment from the Army for use by the USAAF. Colonel Duffy had a reputation for accomplishing difficult assignments by getting the most out of his personnel—exactly what was desired by HQ USAAF to solve the numerous administrative and personnel problems that had arisen in Project MOGUL under Major Crane. In a short period, Colonel Duffy was able to make the necessary corrections and was reassigned to become the Assistant Chief, Electronics Plans Section, Electronics Subdivision, HQ AMC, at Wright Field, OH. Colonel Duffy also continued to monitor "the upper air research program" (i.e., Project MOGUL) in addition to his duties as the Assistant Chief of the Electronics Plans Section.[9] The primary scientist for MOGUL was Dr. James Peoples, assisted by Albert P. Crary, the Field Operations Director. Both scientists had previous associations with Dr. Ewing: Dr. Peoples at Columbia, and A.P. Crary at Woods Hole. Both scientists were assigned to MOGUL for the entire length of the project.

NEW YORK UNIVERSITY "BALLOON GROUP"

From September 30, 1946, until December 31, 1950, the Research Division of the College of Engineering of NYU conducted research under contract for the Army

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Balloon Test Kwajalein").

8. Memo, Brig Gen Tom C. Rives, Chief, Electronic Subdivision, Engineering Division, AMC, to Maj Gen Curtis LeMay, subj: Relief of Major Crane as Project Officer MOGUL and TORRID, Jun 18, 1946.

9. Memo, Maj Gen Curtis E. LeMay, Deputy Chief of Air Staff for Research and Development, to Maj Gen L.C. Craigie, Chief Engineering Division, AMC, Apr 16, 1947.

Air Forces, in conjunction with Project MOGUL.[10] The NYU "balloon group" was to develop and fly constant-level balloons while simultaneously developing telemetering equipment to transmit data obtained in the upper atmosphere.[11] Group members launched, tracked, and recorded data only in regard to constant-level balloon flight and telemetering of information. They did not have access to observations and measurements that had military applications. MOGUL, in other words, was conducted as a compartmented, classified project in which participants knew only what they needed to know, and no more. Due to the compartmentation, balloon flights made by NYU were divided into two categories, "research" and "service."[12] Research flights tested balloon controls and telemetering systems and were fully reported in the unclassified NYU reports.[13] A total of 110 research flights were flown during the contract. Service flights were flown at the direction of Watson Laboratory personnel, but the military purpose was Top Secret. These flights carried classified equipment, which could not be fully reported in the unclassified NYU documents. Further evidence of the exclusion of classified information from the reports is the lack of data for balloons flown in association with the Sandstone nuclear tests held in April and May of 1948.[14] In recent interviews with former NYU personnel, Dr. Athelstan F. Spilhaus, NYU Director of Research, and Professor Charles B. Moore, NYU Constant-Level Balloon Project Engineer, stated that they were never informed of the classified name, MOGUL, nor did they ever have access to the scientific data that was obtained by the USAAF as a result of their efforts. In response to inquiries, professional or casual, project personnel simply said that they were engaged in balloon research.[15]

The first balloon launches associated with Project MOGUL were carried out at several locations on the east coast of the United States.[16] However, unfavorable winds, conflicts with commercial air traffic, and the need to gather data on the V-2 flights currently being conducted at White Sands Proving Ground, NM, led the NYU group to conduct further tests from Alamogordo AAF.[17] The NYU group would make three "field trips" during the summer of 1947 for test and evaluation, labeling them Alamogordo I, II, and III. The majority of the balloon flights over the next four years originated from Alamogordo AAF.

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10. Research Division, College of Engineering, NYU, *Technical Report No. 93.03, Constant Level Balloons, Final Report,* Mar 1, 1951 (hereafter NYU, *Final Report*), p. 3.

11. Research Division, College of Engineering, NYU, *Technical Report 93–02, Constant Level Balloons,*
Sect 1, *General,* Nov 15, 1949, p. 5.

12. NYU, *Final Report,* p. 13.

13. Research Division, College of Engineering, NYU, *Technical Report No. 1, Constant Level Balloon,* Apr 1, 1948, Table VII, "Summary of NYU Constant-Level Balloon Flights" (hereafter NYU, *Technical Report No. 1,* Table VII); ibid., *Technical Report No. 93.02, Constant Level Balloons,* Sect 3, *Summary of Flights.*

14. "Sonic Balloon Test Kwajalein."

15. Athelstan F. Spilhaus, C.S. Schneider, C.B. Moore, "Controlled-Altitude Free Balloons," *Journal of Meteorology,* 5 (Aug 1948): 130–137.

16. NYU, *Technical Report No. 1,* Table VII.

17. Research Division, College of Engineering, NYU, *Progress Report No. 6, Constant Level Balloon,* Sect II, June 1947 (hereafter *Progress Report No. 6,* Sect II), p. 4.

New York University, in accordance with contractual requirements, produced monthly progress reports, technical reports, and final reports detailing the various aspects of the balloon and telemetering research. In addition, Crary maintained a detailed journal of his work throughout his professional career to include the summer of 1947. The following discussion is based on these two documents and interviews with Moore, who was present on all three of the Alamogordo field trips, and, with Trakowski, who was present at the Alamogordo II and III field trips.

NOTE: *Technical Report No. 1,* Table VII, "Summary of NYU Constant-Level Balloon Flights," and Technical Report No. 93.02, *Constant Level Balloons,* Section 3, "Summary of Flights," do not fully account for all balloons flown during the initial stages of the contract to include the Alamogordo I field trip. Absent from the reports are service flight nos. 2, 3, and 4. Flight no. 2 was flown on April 18, 1947, at Bethlehem, PA, in an attempt to obtain acoustical data from the explosion of 5,000 tons of TNT by the British on the German island of Helgoland.[18] NYU flight no. 3 was flown on May 29, followed by NYU flight no. 4 on June 4. Both launched from Alamogordo AAF.

ALAMOGORDO I (May 28, 1947–June 7, 1947)

The first NYU "field trip" departed Olmstead Field, Middletown, PA, by C–47 for Alamogordo AAF on May 31, 1947, arriving on June 1, 1947.[19] Present on this flight was C.B. Moore, NYU Project Engineer, Charles S. Schneider, NYU Project Director, and other supporting staff members from both NYU and Watson Laboratories. A.P. Crary, along with other personnel from Watson Laboratory, were already present in Alamogordo, but they did not conduct any balloon operations. During this time, Crary and several technicians detonated ground explosives, or "shots," for sound-wave generation purposes, on the nearby White Sands Proving Ground. These detonations were monitored by ground-based GR3 and GR8 sound ranging equipment at locations in New Mexico and West Texas.[20] On May 28, the advance party of the balloon group arrived by B–17.[21] On May 29, the advance team made the first launch for Project MOGUL from Alamogordo (NYU flight no. 3). The equipment carried on this flight was identified as essentially the same as that carried on NYU flight no. 2 (Atch 3).[22] NYU flight no. 4 was launched on June 4, with a configuration the same as on flight nos. 2 and 3. Crary's diary indicated that flight no. 4 consisted of a "cluster of (meteorological) balloons" and a "regular sonobuoy."[23] Presumably, flight no. 3 was configured the same.

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18. Research Division, College of Engineering, NYU, *Special Report No. 1, Constant Level Balloon,* May 1947 (hereafter NYU, *Special Report No. 1*), p. 27.
19. Personal journal of Albert P. Crary, p. 13.
20. Ibid., pp. 4–16.
21. Ibid., p. 13.
22. NYU, *Progress Report No. 6,* Sect II, p. 5.
23. Crary personal journal, p. 12.

The objective of this trip, so far as NYU was concerned, was to perfect the handling of large flight trains of meteorological balloons and to evaluate the operations of altitude controlling and telemetering devices.[24] Already established before the trips to Alamogordo was that the use of the standard, 350-gram meteorological balloons, constructed of neoprene, was, at best, a "stop gap" method of achieving constant-level flight.[25] Balloons most suitable for this type of work were made of polyethylene, a very thin, translucent plastic. These balloons, however, had just been developed, and, although the NYU group had contracted for some of them, the balloons had not been received until after the group departed for Alamogordo.[26] For Watson Laboratory scientists Peoples and Crary, the purpose of this trip was to experiment with different types of equipment to collect and transmit sound waves in the upper atmosphere. Therefore, just as the "balloon group" was using meteorological balloons as a stopgap method in attaining constant-level flight, the Watson Laboratory scientists utilized an AN/CRT–1A Sonabuoy while awaiting the delivery of acoustical equipment specifically designed for Project MOGUL.[27] The NYU personnel developing the telemetering equipment experimented with components of the sonabuoy, which was cylindrical, nearly 3 feet long and 4 3/4 inches wide, and weighing 13 pounds (Atch 4). The sonabuoy contained both the acoustical pickups, known as hydrophones, and the means of telemetering the sounds by use of a FM transmitter, the T–1B/CRT–1.

Soon after arriving at Alamogordo AAF, a problem developed. Dr Peoples, Project Scientist, decided not to bring the radiosonde recorder (an AN/FMQ1 weighing approximately 500 pounds), due to the weight and space limitations of the B–17 aircraft originally scheduled to transport the equipment from Olmstead Field. Radiosondes were a widely used and accurate method of tracking weather balloons consisting of a transmitter, which was carried aloft by the balloon, and a ground-based receiver/ recorder. Radiosondes, along with aircraft, were to be the primary method to track the Project MOGUL balloons.[28] Dr. Peoples, however, believed that the radar currently in place at Alamogordo for tracking V–2 firings would be sufficient for tracking the balloons trains. However, this radar did not work well and often lost contact with the balloon while it was still within visual range. Accordingly, Moore, the project engineer, experimented with an "unorthodox" method, in the absence of a radiosonde recorder. He tried to track the balloons using multiple radar targets.[29] A radar target was a multisided object, which, in appearance, resembles a box kite constructed of balsa wood and metallicized paper (Atch 5). Moore and his technicians conducted test flights, attempting to obtain a better radar return by attaching additional targets. They

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24. Research Division, College of Engineering, NYU, *Progress Report No. 7, Constant Level Balloon,* Sect II, Jul 1947 (hereafter NYU, *Progress Report No. 7,* Sect II), p. 5.

25. NYU, *Special Report No. 1,* p. 26.

26. NYU, *Progress Report No. 7,* Sect II, p. 6.

27. Research Division, College of Engineering, NYU, *Progress Report No. 4, Radio Transmitting, Receiving and Recording System for Constant Level Balloon,* Sect I, Apr 2, 1947, p. 1.

28. Intvw, Col Jeffrey Butler and 1st Lt James McAndrew with Professor Charles B. Moore, Jun 8, 1994.

29. Moore intvw, Jun 8, 1994.

received satisfactory results when the number of targets was increased to between 3 and 5.[30] Interestingly, during July of 1948, a similar test would be made at Alamogordo AAF by another organization.[31] This test confirmed Moore's theory that when targets were increased to at least three, satisfactory returns were received by the radar. This procedure, according to Moore, was employed on flight nos. 3 and 4, but it was only marginally successful. This prompted Moore and his associates to configure the two remaining flights of Alamogordo I, flights #5 and #6, with radiosonde transmitters.

For these two final flights, Moore devised a method of manually determining azimuth and elevation, in the absence of a radisonde recorder, by counting clicks as pressure-sensitive contacts closed. NYU Technical Report No. 1 shows two "interpretations" of the data which confirm that manual calculations were used. In regard to flight no. 5, it appears there was a typographical error in Technical Report No. 1, Table VII, for the time of launch which is erroneously listed as 1517 MST, contrary to figures 32 and 33 in Technical Report No.1 and Crary's diary (Atch 6). The correct time of launch for flight no. 5 appears to be 0516 MST. With the launching of flight no. 6 at approximately 0530 on June 7, the NYU group departed Alamogordo via a B–17 for Newark AAF, NJ. NYU flight nos. 1–6 are summarized below:

SUMMARY OF FLIGHTS 1–6

Flight no.	Date	Launch Site	Configuration	Landing Site
1	4/3/47	Bethlehem, PA	See NYU *Tech. Report No. 1*, Table VII	Sandy Hook, NJ
2	4/18/47	Bethlehem, PA	See Appendix NYU *Special Report No. 1*	Unknown
3	5/29/47	Alamogordo, NM	Same as flight no. 2*	Unknown
4	6/4/47	Alamogordo, NM	Same as flight no. 2*	Unknown
5	6/5/47	Alamogordo, NM	See NYU *Tech. Report No. 1*, Table VII	East of Roswell, NM
6	6/7/47	Alamogordo, NM	See NYU *Tech. Report No. 1*, Table VII	South of Highrolls, NM

* Depictions of flight nos. 3 and 4 are not provided in the NYU reports. According to NYU *Progress Report No. 6*, Section II, p. 5, the equipment to be used for the Alamogordo field trip in June was consistent with the depiction of flight no. 2. This information also concurred with Crary's partial description of flight no. 4 in his diary.

Note: An attempt to launch a balloon-train assembly which would have been NYU flight no. 3 was made on May 8, 1947, but due to strong winds, restraining lines failed before the acoustical payload was attached. Since the launch was unsuccessful, no flight number was assigned.

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30. Ibid.

31. Rprt, Holloman AFB, "Progress Summary Report on U.S.A.F. Guided Missile Test Activities," Vol 1, Aug 1, 1948.

ALAMOGORDO II (June 27, 1947–July 8, 1947)

On the morning of June 28, 1947, personnel from NYU and Watson Laboratories arrived at Alamogordo AAF to resume balloon flights. Present during this field trip were Dr. Peoples, A.P. Crary, Captain Trakowski, C.B. Moore, and Charles Schneider. The objective during this trip was to experiment with the newly developed polyethylene balloons which replaced the neoprene meteorological balloons used on the previous field trip. Also tested was an improved aluminum ballast reservoir that had been developed to replace the plastic tubes used during the June field trip.[32] Another improvement that resulted from the experiences in June was the presence of a radiosonde receiver/recorder for improved balloon tracking and plotting. This eliminated the need for radar "corner reflectors" on the balloon train since radar was not to be used as a primary method of tracking the flights. This is confirmed by Technical Report No. 1, Table VII, "Radiosonde Reception %," which indicates the use of the radiosonde recorder on all flights except for no. 7. Flight no. 7 was not recorded by radiosonde because the equipment was not operable.[33] Also Figures 36, 39, 42, and 44 in Technical Report No. 1, corresponding to the July flights, do not depict corner reflectors. All numbered flights (except for no. 9) flown during the July field trip were summarized in NYU Technical Report No 1, Table VII. Flight no. 9 appeared to have been launched on July 3.[34] On July 8, their work completed, 23 members of the combined NYU and Watson Laboratory group boarded a C–54 aircraft at 1030 AM and returned to the east coast.[35]

Based on the above, it appeared likely that the debris found by the rancher and was subsequently identified as a "flying disc" by personnel from Roswell AAF was, with a great degree of certainty, MOGUL flight no. 4, launched on June 4, 1947. This conclusion was based on the following:

1. Descriptions of the debris provided by Brazel, Cavitt, Crary's diary, and the photos of the material displayed in General Ramey's office. These materials were consistent with the components of a MOGUL service flight, with neoprene balloons, parchment parachutes, plastic ballast tubes, corner reflectors, a sonabuoy, and a black electronics box that housed the pressure cutoff switch (Atch 3).

2. According to Brazel's July 8 statement, the debris was recovered on June 14, obviously eliminating any balloons launched in July.

3. Only two flights launched in June were unaccounted for, i.e., flight nos. 3 and 4. Flight no. 3, most likely would not have had the "unorthodox" configuration of corner reflectors devised by Moore, who did not arrive until June 1, three days after flight no. 3 was launched.

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32. NYU, *Progress Report No. 7*, Sect II, p. 5.
33. Crary personal journal, p. 15.
34. Ibid.
35. Ibid., p. 16.

On July 7, as the NYU group members were winding down their work and preparing to return to New York City, a train of events began to unfold at Roswell AAF, 60 miles away. Roswell AAF was home of the 509th Bomb Group of the Strategic Air Command's Eighth Air Force, the only unit in the world capable of delivering nuclear weapons. It now appears that the debris from MOGUL flight no. 4 had come to earth on the plains east of the Sacramento Mountains, about 70 miles from the launch point at Alamogordo AAF (Atch 7). The fact it descended there was not unusual. Over the course of Project MOGUL, several balloons had landed and been recovered from that area. In fact, in August 1947, the NYU group had to receive special permission from the Civil Aeronautics Administration to continue to launch balloons from Alamogordo AAF since "balloons have been descending outside of the area [White Sands Proving Ground] in the vicinity of Roswell, New Mexico."[36] According to the sole living participant in the recovery, Sheridan Cavitt, he, Major Marcel, and MSgt William Rickett gathered some of the material, which appeared to resemble "bamboo type square sticks, one quarter to one half inch square," that was "very light"—reflecting material—and a "black box, like a weather instrument." Cavitt believed this material to be consistent with what he knew to be a weather balloon. This debris, would soon become, for a short time, the focus of national and even worldwide attention when it was thought to be a "flying disc."

On July 8, the same day that the NYU/Watson Laboratory group departed Alamogordo, the Public Information Office of Roswell AAF announced the recovery of a "flying disc" and that it would be flown to Fort Worth AAF for further examination. How could experienced military personnel have confused a weather balloon for a "flying disc"? The answer was this was not an ordinary "weather balloon." Typical weather balloons employed a single, 350-gram neoprene balloon and a radiosonde for measuring temperature, atmospheric pressure, and humidity, housed in a cardboard box. If it was to be tracked by radar for wind-speed measurement, a single corner reflector was added (Atch 8). The balloon that was found on the Foster Ranch consisted of as many as 23 350-gram balloons spaced at 20 foot intervals, several radar targets (3 to 5), plastic ballast tubes, parchment parachutes, a black "cutoff" box containing portions of a weather instrument, and a sonabuoy (Atch 3). After striking the ground, the radar reflectors, constructed of very light materials for minimum weight, would tear and break apart, spreading out over a large area when pulled across the ground by balloons that still possessed some buoyancy. It should also be understood that the term "flying disc" was not at this time synonymous with "space ship," It denoted a disc-shaped flying object of unknown (or suspected Soviet) origin.

Before the announcement was made, the "disc" was flown to Fort Worth AAF, at the direction of Brig Gen Roger Ramey, Commander, Eighth Air Force. General Ramey personally inspected the "disc," became skeptical, and summoned the base

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36. NYU, *Technical Report No. 1*, Table VII, p. 43.

weather officer, Warrant Officer Irving Newton, to make an identification. Newton positively identified the debris as the remnants of a balloon and RAWIN target.[37] With this identification, the incident officially closed.

THE "COVER STORY"

From research, it appears that the wreckage displayed on July 8 consisted of unclassified components of a MOGUL balloon assembly. Possibly withheld, if it was indeed recovered, was the AN/CRT–1 Sonabuoy, which could have compromised Project MOGUL. Although the Sonabuoy was not itself classified, its association with a balloon would have exposed a specific military purpose, an obvious violation of project classification guidelines (Atch 9). A device described in "crashed disc" publications as "a giant thermos jug" was allegedly transported from Fort Worth AAF to Wright Field.[38] This description is consistent with the appearance of an AN/CRT–1 Sonabuoy such as was used on flight no. 4 (Atch 4). At some point General Ramey decided to forward the material to Wright Field, home of AMC, the appropriate agency to identify one of its own research devices or a device of unknown origin. If the debris was determined to be from an unknown source, the AMC, T–2, Intelligence or Analysis Division, would conduct scientific and/or intelligence analysis in an attempt to discover its origin. But since the balloons, reflectors, and Sonabuoy were from an AMC research project, the debris was forwarded to the appropriate division or subdivision, in this case the Electronics Subdivision of the Engineering Division. There, it was identified by Colonel Duffy, under whose purview Project MOGUL operated. Colonel Duffy, a former project officer of MOGUL with specific directions to "continue to monitor upper air programs," was the appropriate headquarters officer to make an identification, which he apparently did. According to Captain (now Colonel) Trakowski, the officer who succeeded Colonel Duffy as project officer on MOGUL, after returning from the Alamogordo II field trip, Colonel Duffy contacted him by phone at Watson Laboratories and informed him that the "stuff you've been launching at Alamogordo," had been sent to him for identification. He described the debris to Captain Trakowski, and Trakowski agreed that it was part of his project (MOGUL).[39]

Another occurrence sometimes said to "prove" that General Ramey was part of a cover story is that portions of the debris were flown to Andrews AAF, MD. Andrews would have been a probable location to send the debris since it had components of weather observation equipment. Andrews AAF was headquarters of the Army Air Forces Weather Service. It is also interesting to note that the commanding general of the Weather Service, Brig Gen Donald N. Yates, was quoted in wire service newspaper articles on July 9, providing his opinion of the

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37. Rawin is short for radar wind, a technique in which a single corner reflector is towed aloft by a single neoprene balloon to measure wind speed by radar.

38. Kevin Randall and Donald Schmitt, *UFO Crash at Roswell* (New York, 1991), p. 103.

39. Intvw, Col Jeffrey Butler and 1st Lt James McAndrew with Col Albert C. Trakowski, USAF (Ret), Jun 29, 1994, p. 4.

incident. Additionally, in 1949, General Yates received a full briefing of the projects, including constant-level balloons, that made up Project MOGUL.[40] While crashed disc proponents claim that General Ramey ordered a "colonel courier" to transport portions of the debris in a briefcase handcuffed to his wrist for the inspection of his superior, Maj Gen Clement McMullen, Deputy Commander of Strategic Air Command, it is more likely that any forwarding of such debris was another attempt to identify the research agency to which it belonged. If it did go to General McMullen, it would not have been difficult for him to have obtained the opinion of the Weather Service, since SAC and the Weather Service were located in the same building (no. 1535) at Andrews AAF.

"HIEROGLYPHICS"

One of the most puzzling aspects of the reports that a "UFO" crashed near Corona in 1947 were the later descriptions of "hieroglyphic-like" characters by seemingly reliable, firsthand witnesses. Research has revealed that the debris found on the ranch and displayed in General Ramey's office probably did have strange characters. These, however, were not hieroglyphics, but figures printed on the pinkish-purple tape used to construct the radar targets used by the NYU group.

The witnesses have recalled small pink/purple "flowers" that appeared to be some sort of writing that couldn't be deciphered. These figures were printed on tape that sealed the seams of the of the radar target. The radar targets, sometimes called corner reflectors, had been manufactured during or shortly after World War II, and due to shortages, the manufacturer, a toy company, used whatever resources were available. This toy company used plastic tape with pink/purple flowers and geometric designs in the construction of its toys and, in a time of shortage, used it on the government contract for the corner reflectors. A depiction of these figures, as described by C.B. Moore, is shown in Attachment 10.

Allegations have also been made that the debris displayed to the press on July 8 and subsequently photographed was not the original wreckage; i.e., a switch had occurred sometime after the debris left Roswell AAF. However, statements made by Moore and Trakowski attested that the corner reflectors they launched during that period had the same flowers and figures that were later reported by Marcel, Cavitt, and Brazel as being on the debris found on the Foster ranch in Corona. In fact, Trakowski distinctly remembered the figures on the tape because, when the targets first were produced, much fanfare was made over the use of a toy manufacturer for production. He related that a fellow USAAF officer, John E. Peterson, monitored the procurement of the targets and "thought it was the biggest joke in the world that they had to go to a toy manufacturer" to make the radar targets and an "even a bigger joke when . . . the reflecting material on the balsa frames was some kind of a pinkish purple tape with hearts and flowers

40. Rprt, Cambridge Field Sta, AMC, "Review of Air Materiel Command Geophysical Activities by Brigadier General D.N. Yates, and Staff, of the Air Weather Service," Feb 10, 1949.

designs on it."[41] Furthermore, the Fort Worth Army Airfield Weather Officer, Irving Newton, who was called in to identify the wreckage, also remembers the purple/pink marks. Newton stated that when he was called to General Ramey's office he remembers meeting Marcel, who attempted to convince him that the wreckage on the floor of the office was a crashed "flying disc." Newton, having seen many weather balloons and targets, positively identified the debris as a weather device.[42] In short, descriptions of the wreckage found on the ranch near Corona and of the wreckage displayed in General Ramey's office are entirely consistent with each other.

THE REAL COVER STORY

On July 10, 1947, a newspaper article appeared in the *Alamogordo Daily News* displaying for the press the devices, neoprene balloons, and corner reflectors which had been misidentified as the "flying disc" two days earlier at Roswell AAF (Atch 11). The photographs and accompanying article quoted Maj Wilbur D. Pritchard, a Watson Laboratory Project Officer (not assigned to MOGUL) stationed at Alamogordo AAF. This article appeared to have been an attempt to deflect attention from the Top Secret MOGUL project by publicly displaying a portion of the equipment and offering misleading information. If there was a "cover story" involved in this incident, it is this article, not the actions or statements of Ramey.

The article in the *Alamogordo Daily News* stated that the balloons and radar targets had been used for the last fifteen months for the training of long-range radar personnel and the gathering of meteorological data. The article lists four officers—Maj W.D. Pritchard, Lieut S.W. Seigel, Capt L.H. Dyvad, and Maj C.W. Mangum—as being involved with the balloon project, which was false. Moore and Trakowski could not recall any of the officers in the photograph, with the exception of Dyvad, whom Moore identified as a pilot who coordinated radar activities.[43] Additionally, some of the details discussed (balloon sighting in Colorado, tracking by B–17s, recovery of equipment, launching balloons at 5–6 AM, and balloon altitudes of 30,000–40,000 feet) relate directly to the NYU balloon project, indicating that the four officers had detailed knowledge of MOGUL.[44] Moore's unorthodox technique of employing several balloons and several radar targets was shown in one of the photographs. Other techniques unique to Moore,

41. Trakowski intvw, Jun 29, 1994.
42. Newton intvw, Jul 21, 1994.
43. Moore intvw, Jun 8, 1994.
44. NYU, *Technical Report No. 1*, Table VII.

including the boiling of balloons before launch (which he personally developed during World War II) and a stepladder used to launch balloons, could not all have coincidentally been used by other organizations.[45]

The details may have been provided to the radar officers by Crary, Project MOGUL Field Operations Director, who did not depart by C–54 with the rest of the NYU/Watson Laboratory group on July 8, but who later left by car on July 9, the day the staged launch took place. Additionally, three of Crary's staff, Don Reynolds, Sol Oliva, and Bill Edmonston, resided permanently in Alamogordo. It was apparent from Crary's diary that he had worked very closely with Major Pritchard and reported to him on occasion (twelve documented meetings from December 1946–April 1947). One instance, on April 7, 1947, Crary gave Pritchard a "progress report for MOGUL project to date," indicating that Major Pritchard had access to MOGUL information.[46] Another statement which appeared to confirm a cover story appeared in the caption below the balloon picture and described a typewritten tag stapled to the target identifying it as having come from Alamogordo AAF. Moore believed this not to be true because any equipment found was not to be associated with the USAAF, only with NYU; therefore flights carried "return to" tags identifying NYU as the responsible agency.[47]

CONCLUSION

Many of the claims surrounding the events of July 1947 could be neither proved nor disproved. Attempts were not made to investigate every allegation, but rather to start with what was known and work toward the unknown. To complicate the situation, events described here took place nearly 50 years ago and were highly classified. This Top Secret project appeared to have utilized the concept of compartmentalization very well. Interviews with individuals and review of documents of organizations revealed that the ultimate objective of the work, or even the name of the project, in many instances was not known. It was unlikely, therefore, that personnel from Roswell AAF, even though they possessed the appropriate clearances, would have known about project MOGUL. In fact, when the NYU/AMC group returned to Alamogordo in September, their first trip since the "incident" occurred, one of the first activities of the project scientists, Peoples and Crary, who were accompanied by Major Pritchard and Captain Dyvad, was to brief the commanding officer of Alamogordo AAF and the 509th Bomb Group Operations Officer, Lt Col Joseph Briley, on MOGUL.[48]

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45. Moore intvw, Jun 8, 1994.

46. Crary personal journal, p. 10.

47. Moore intvw, Jun 8, 1994; Research Division, College of Engineering, NYU, *Technical Report No. 93.02, Constant Level Balloons,* Sect 2, *Operations,* Jan 31, 1949, pp. 36–38.

48. Combined Hist, 509th Bomb Grp and Roswell AAF, Sep 1–30, 1947, p. 79; Untranscribed journal of Albert P. Crary, p. 64.

When the civilians and personnel from Roswell AAF (Marcel, Cavitt, and Rickett) "stumbled" upon the highly classified project and collected the debris, no one at Roswell had a "need to know" about information concerning MOGUL. This fact, along with the initial misidentification and subsequent rumors that the "capture" of a "flying disc" occurred, ultimately left many people with unanswered questions that have endured to this day.

JAMES McANDREW, 1st Lt, USAFR
Declassification and Review Officer
SAF/AAZD

Attachments:
1. 4 Photographs of Balloon Debris
2. Organizational Chart—Watson Laboratories
3. Drawing—New York University Flight No. 2
4. 2 Depictions of AN/CRT–1 Sonabuoy
5. Drawing of Corner Reflector
6. New York University *Technical Report No. 1,* Table VII
7. Map of New Mexico
8. Typical Employment of Weather Balloon and Corner Reflector
9. Project MOGUL Classification Letter
10. Drawing of "Hieroglyphics" by Prof. C.B. Moore
11. *Alamogordo Daily News* Article

1

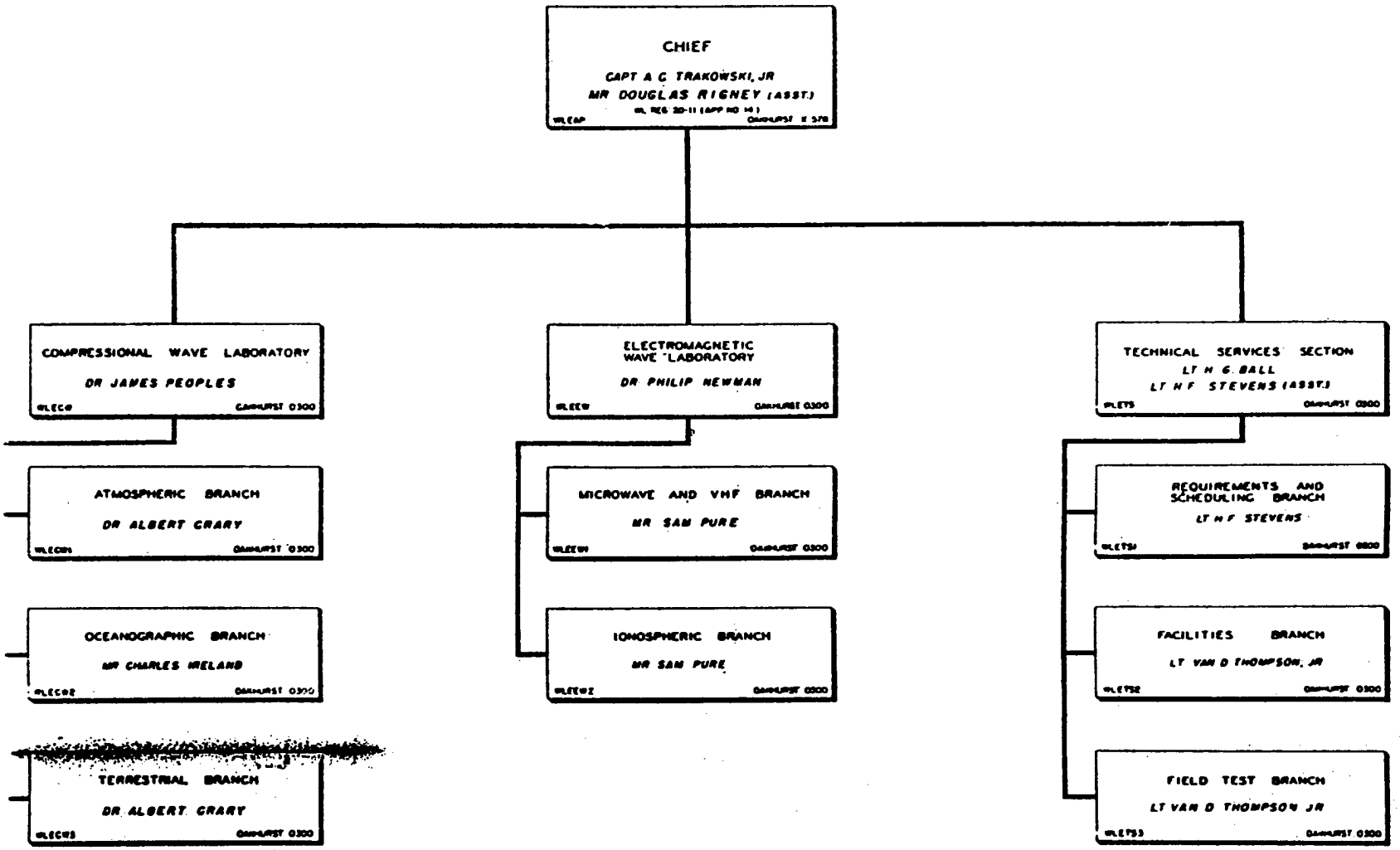
Fort Worth Star–Telegram
Photographs of Balloon Debris
[July 9, 1947]

Same as
Weaver Attachment 16

2

Organizational Chart
Watson Laboratories
January 20, 1947

APPLIED PROPAGATION SUBDIVISION
AIR MATERIAL COMMAND
WATSON LABORATORIES
20 JAN 1947



WLCMC CHART NO 6

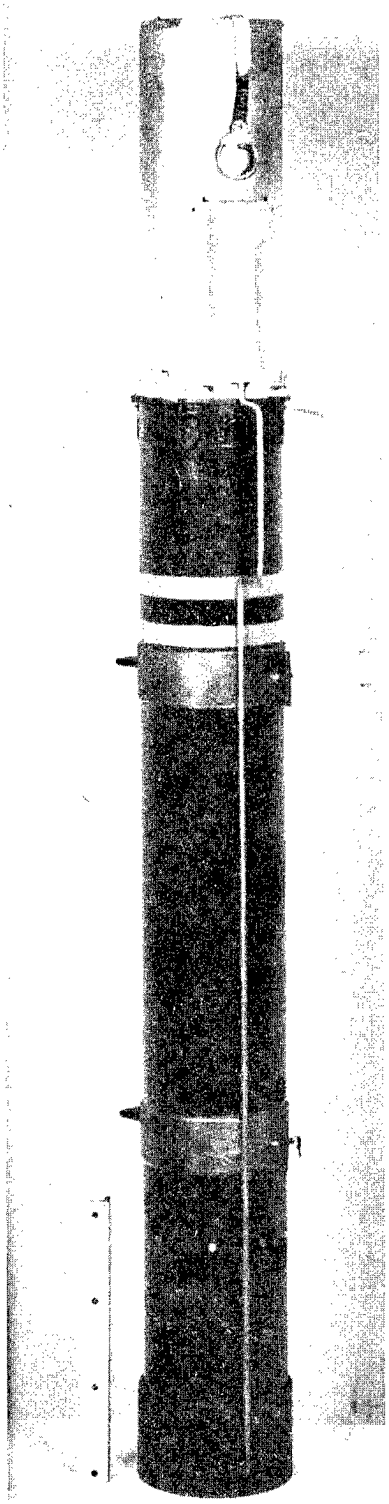
3

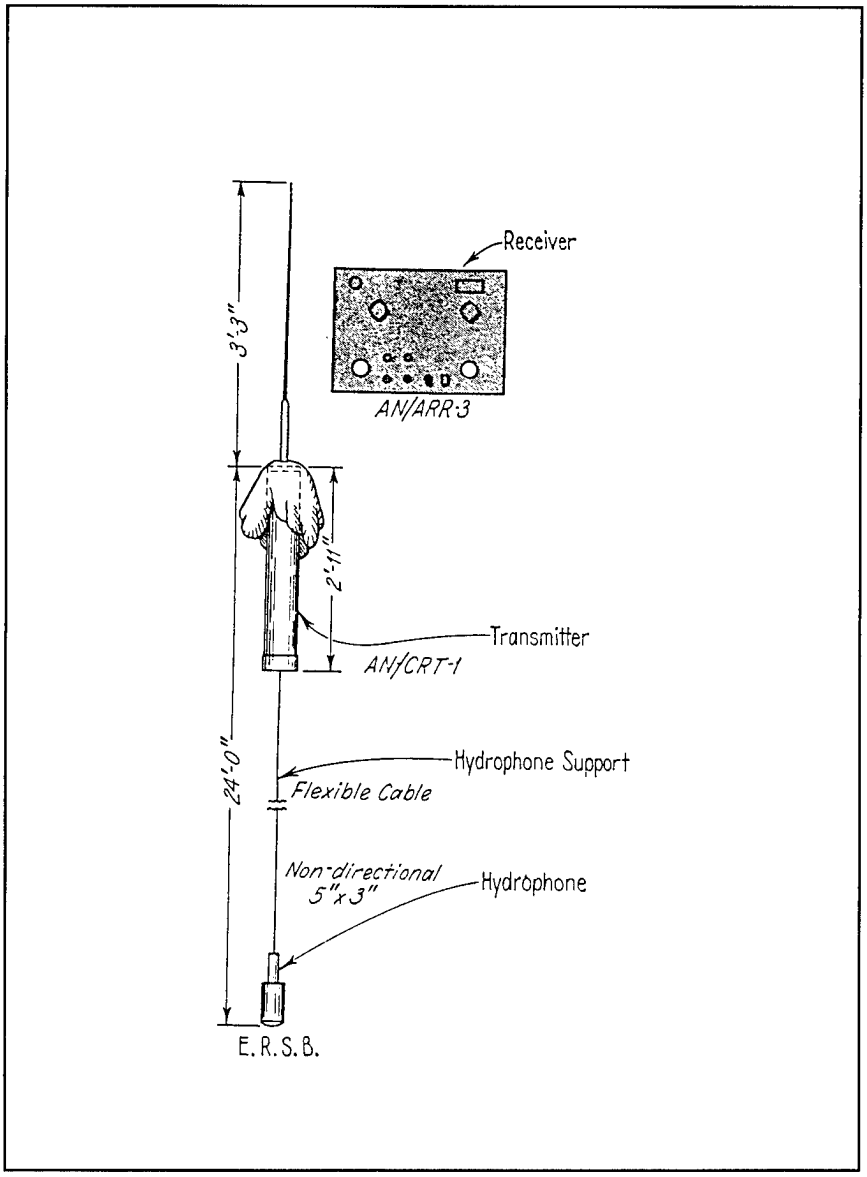
Drawing
Cluster Flight No. 2

Same as
Weaver Attachment 25

4

Illustrations
AN/CRT–1 Sonabuoy




Receiver
3'-3"
AN/ARR-3
2'-11"
Transmitter
AN/CRT-1
24'-0"
Hydrophone Support
Flexible Cable
Non-directional
5"x3"
Hydrophone
E.R.S.B.

5

Blueprint
Corner Reflector, ML–307C/AP
Assembly

Same as
Weaver Attachment 29

6

Summary Table
NYU Constant-Level Balloon Flights
November 20, 1946–September 9, 1947

See also
Weaver Attachment 27

TABLE VII

SUMMARY OF NYU CONSTANT-LEVEL BALLOON FLIGHTS

FLIGHT NUMBER	DATE AND RELEASE TIME	LAUNCHING SITE	DESCRIPTION OF BALLOONS	BALLOON WEIGHT	DESCRIPTION OF EQUIPMENT	TOTAL WEIGHT OF BALLOON INCLUDING BALLAST	DESCRIPTION OF ALTITUDE CONTROL	BALLAST WEIGHT	FREE LIFT	BALLOON LIFT	RADIOSONDE RECEPTION %	TRACKING %	AIRCRAFT OBSERVATION %	FLIGHT DURATION	OPTIMUM CONSTANCY	MAXIMUM & CONSTANT LEVELS MSL	RECOVERY & LAND-ING SITE	CRITIQUE
11	7 July 1947 0508 MST	Alamogordo New Mexico	7 - General Mills 1 - 15' .008" Poly-ethylene 6 - 7' .001" Poly-ethylene in Helios cluster below 15' balloon	17.1 kg	74.5 mc Radiosonde Ballast assembly	15.9 kg	Dribbler Compass fluid Fixed leak 300 gm/hr	3 kg	11.3 kg	27.2 kg	97% with recorder	Theodolite 38%	100% C-54	550 min.	423 min. ± 1500'	Max. 16800' Const. 16000'	0%	Balloons used in cluster to obtain higher altitude. In high wind at launching 3 small balloons deflated. Therefore cluster did not rise high enough to actuate altitude control. Dribbler leak and balloon diffusion both 300 gm/hr. Therefore balloon remained at ceiling until ballast was expended.
12	5 Aug. 1947 0714 EST	Lakehurst New Jersey	1- General Mills - 20' .001 Poly-ethylene	4.1 kg	3 mc transmitters 39.7 mc Radiosonde 72.2 mc Radiosonde Ballast assembly	28.0 kg	Automatic and manual ballast valves and minimum pressure switch	5 kg	3.8 kg	31.8 kg	100% Hillman	Theodolite 15% SCR-658 80%	85%	407 min.	60 min. ± 400'	Max. 14100'	95% Smyrna, Delaware 85 mi.	First flight with large thin balloon. Open appendix caused helium dilution with air-cover over appendix thought to have caused balloon rupture, terminating flight early and low. Flight not successful as balloon test or altitude control test.
13	5 Sept. 1947 0647 MST	Alamogordo New Mexico	2 General Mills 20'.001" Poly-ethylene. 10' appendices inside shroud lines	8.4 kg	397 mc Radiosonde Data Gear Ballast release	24.2 kg	Automatic Ballast release assembly	10.0 kg	3.8 kg	28.0 kg	100%	Theodolite 100% SCR-658 100%	Not required Burst over desert	58 min.	None (burst)	Max. 47600'	0% White Sands, N. M.	Appendices twisted around shroud lines, preventing valving of gas at pressure altitude. Both balloons burst within 2 minutes and gear fell free to desert. Recovery not attempted.
14	6 Sept. 1947 0613 MST	Alamogordo New Mexico	1 General Mills 20' .001" Poly-ethylene. 10' appendix outside shroud lines	4.0 kg	397 mc Radiosonde Banner, Ballast release	15.1 kg	Automatic Ballast release assembly	5.0 kg	2.2 kg	17.3 kg	100%	Theodolite 100% SCR-658 100%	Last 10% (L-5)	55 min.	None (burst)	Max. 49000'	100% 6 mi. north of Alamogordo AAF	Appendix again twisted around shroud lines, preventing valving of gas at pressure altitude, where balloon burst. Descent retarded by banner.
15	6 Sept. 1947 1153 MST	Alamogordo New Mexico	1 General Mills 20' .001" Poly-ethylene. 1' appendix outside shroud lines.	4.0 kg	397 mc Radiosonde Banner, Ballast release	15.1 kg	Manual ballast valve. Fixed rate of leak 1000 gm/hr	5.0 kg	2.6 kg	17.7 kg	364 min.	Theodolite 175 min. SCR-658 364 min.	Not required Accurate data not required	More than 364 min.	71 min. ± 900'	Max. 45800' Const. 34000'	0%	First flight with large G. M. balloon which did not burst due to appendix. Believe holes in balloon due to high wind at launching caused slow descent after pressure height was reached. Shows need of short appendix and automatic ballast valve.
16	8 Sept. 1947 0828 EST	Alamogordo New Mexico	1 General Mills 20' .001 Poly-ethylene. 2' appendix outside shroud lines	4.4 kg	397 mc Radiosonde Data gear Banner Ballast release	16.1 kg	Automatic Ballast Release assembly	3.2 kg	2.4 kg	18.5 kg	100%	Theodolite 100% SCR-658 100%	Not required A/c used to search for gear	30 min.	None (burst)	Max. 31700'	0% 6 miles NE Alamogordo AAF	Heavily loaded balloon with too much free lift (inflated by volume estimate in wind). High oscillations observed after release. Balloon burst due to blowing off top well below pressure altitude. Balloon came down with free falling gear but was not found.
17	9 Sept. 1947 1647 MST	Alamogordo New Mexico	1 H. A. Smith 15' .004" Poly-ethylene with 18 lead points	6.4 kg	397 mc Radiosonde Banner Ballast release	11.3 kg	Automatic Ballast release assembly 100 gm/hr fixed leak	4.0 kg	2.1 kg	13.4 kg	281 min.	281 min.	Not required night flight	estimated 10 hrs.	181 min. ± 500'	Max. 29700' Const. 29100'	Croft, Kansas 555 miles	Successful controlled altitude flight demonstrating altitude controls maintaining height through a sunset. Balloon descended near Croft, Kansas long after passing out of Roswell's reception range. Need for a barograph shown.

7

Map of New Mexico

See
Map of New Mexico
in
Photograph Section

8

Illustration
Weather Balloon and Corner Reflector

Figure 50. Pilot Balloon Target ML–307/AP or ML–307A/AP ready for flight.

Status: Standard. *Stock No.:* 7A1237. *Reference:* TM 1–235.

Pilot Balloon Target ML–307(*)/AP represents Pilot Balloon Targets ML–307/AP, ML–307A/AP, and ML–307B/AP. Pilot Balloon Target ML–307 (*)/AP is a reflector which is attached to a 100- or 350-gram pilot balloon to assist in tracking it by radar. It is composed of a combination of triangular-shaped surfaces constructed of light, paper-backed aluminum foil supported by balsa sticks; it weighs approximately 100 grams. The target folds into a flat triangle for shipment. Pilot Balloon Target ML–307(*)/AP is designed to function best with Radio Sets SCR–584 (any model), SCR–545 (tracking components), and SCR–614 (any model). The targets are packed 24 to a shipping container.

9

Letter
Brig Gen E. O'Donnell to
Commanding General AAF
July 8, 1946

Included in
Weaver Attachment 19

10

Hieroglyphs
Charles B. Moore
August 28, 1992

Included in
Weaver Attachment 21

11

Alamogordo News
"Fantasy of 'Flying Disc' Is Explained Here: News Men Watch Army Radar Crew Launch 'Disc'"
July 10, 1947

On July 31, 1947 the Federal ...ureau of Investigation is holding ...e of its series of conferences at ...ardmore in the District Court ...oom. Law enforcement officers of ...he Southwest are invited to at...end. A profitable program has ...een ...ned.

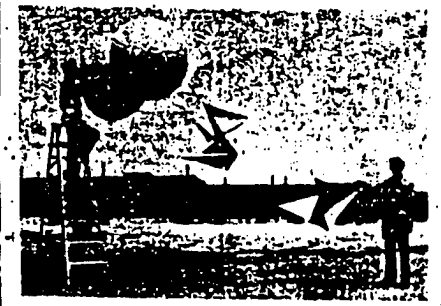
Alamogordo News

ABSORBED OTERO COUNTY ADVERTISER JAN. 1, 1913.—ABSORBED ALAMOGORDO CLOUDCROFTER AUG. 27, 1932

VOLUME 34, NUMBER 30 — ALAMOGORDO, NEW MEXICO, THURSDAY, JULY 24, 1947 — SUBSCRIPTION: $2.00 Per Year

FANTASY OF "FLYING DISC" IS EXPLAINED HERE

Above is a small section of the radar experimental equipment and personnel of the Watson Laboratories, AMC, which is attached to the White Sands Proving Ground Guided Missiles Project, tracing a "flying disc" or corner reflector as the army knows it,in flight by radar, photographing of the flight, charting and projecting upon a screen its progress. Arrow at the right shows the movie camera recording of the flight as detected by radar apparatus and arrow on left is pointing to a screen upon which seven seconds later the picture of the flight is shown. (Army Air Forces photo.)



Launching of the the corner reflector radar experimental device is about to take place in the above picture. This is undoubtedly the device reported far and wide as the "flying disc." It is, in the above picture as snapped by a member of the Alamogordo News staff, shown to be a two-balloon carried pair of commonly used radar reflector paper triangles covered with tinfoil and held rigidly by small wooden strips. Each of these corner reflectors is held to the other and the two supporting balloons by twine. On the edges of the board frames of each "flying disc" is stapled a slip of typed paper bearing the words, "Property of Army Material Command Watson Laboratories, Army Air Field, Alamogordo New Mexico. (Alamogordo News photo.)

Above (reading left to right) Major C. W. Mangum, Lt. S. W. Seigel Major W. D. Pritchard, and Capt. L. H. Dyrad, of Watson Laboratories Army Material Command long range radar detection project at the Army Air Base nine miles west of Alamogordo. These are the officers in charge at the station and Major Pritchard the one who invited members of the Alamogordo News staff to view the launching of a corner reflector Wednesday at 1 p. m. (Army Air Forces photo.)

Young Democratic ... Started In ... County

Members of the executive committee and the central committee of the Otero County Democrats met at the courthouse Monday afternoon to organize a Young Democrats' Organization for Otero County. The nucleus of the organization, the selection of the officers, was accomplished by the parent organization, and are as follows:

Allan D. Walker, Alamogordo, president; Ray Bowell, Pinon, first vice president; Mrs. Cleo Dudas, Tularosa, second vice president; Harry Nist, Cloudcroft, third vice president; Chino Sanchez, Alamogordo, fourth vice president; Miss Evelina Nunes, secretary; Harold O'Dell, Alamogordo, treasurer; Billy Dunn, sergeant-at-arms.

The group was organized under the direction of Ingram B. Pickett, state organizer, and Verner Clayton, county Democratic chairman.

A membership drive, contest, social activities, and other functions are planned for the new organization, Mr. Pickett said. The state conference of Young Democrats will be held in Albuquerque August 16.

M. P. Killed By Accidental Shot

Sgt. Louis Steiger, 24, military policeman assigned to the Alamogordo Army Air base, was almost instantly killed Wednesday afternoon, just before six o'clock, by the accidental discharge of a firearm held by another military policeman, according to an announcement on Thursday morning by Lt. Schlach of the base's legal department. Details of the shooting are being withheld, Lt. Schlach said, pending two separate investigations which are now under way.

...dy of Sgt. Steiger and another military policeman whose ... is withheld, who received a minor flesh wound in the leg from the same discharge of the weapon, were taken to Wm. Beaumont Hospital in El Paso.

Nearest relatives of Sgt. Steiger have been notified, Lt. Schlach announced. His home was in Bear Creek, Pa.

Further details of the accident will be released following the investigations, it was announced.

DEAN SHERRY, FORMER RESIDENT, VISITS OLD FRIENDS HERE

Dean Sherry (to old friends here) ...ut in his home section of San Di...

Cloudcroft Host To Golf Tourney

Local talent at Cloudcroft will be put behind John Parker in the hope of defending their home course at the Lodge against all comers in the annual tournament which opens July 17.

Playing on the famous, highest in the world golf course, the qualifiers will conclude play on Thursday, July 17, and tournament play will begin.

Many unknown golfers are drifting in this week rehearsing for the tournament with some old favorites on hand for practice rounds.

Tucson, Arizona, will have about a half-dozen golfers on hand and Odessa, Texas, has about the same number of entries. El Paso will send the largest and strongest contingent, it was stated.

The greens and fairways were announced in good order for the tournament play.

AAF Weather Experts Forecast For V-2 Firings

A small but efficient weather station has been installed at the White Sands Guided Missile Proving Grounds by the Air Weather Service of the Army Air Forces.

The weather station is unlike other stations in that the technicians at White Sands are primarily interested in meteorological conditions of the upper air regions rather than weather close to the earth's surface which effect normal air traffic.

For this reason the weather technicians use the latest in radio equipment. Large 2,000 gram neoprene balloons carry delicate instruments to about 100,000 feet with ground radio receivers, direction-finding equipments, and surveillance radar units correlate weather conditions at extreme heights.

One of the major projects at White Sands is the series of captured German V-2 rocket firings in which leading scientists of major research organizations place various types of recording instruments in the warheads of the rockets in science's efforts to solve some of the mysteries of the upper atmosphere.

The importance of weather forecasting for these rocket firings is vital to the success of the V-2 program.

Four complete forecasts ranging from 72 to 6 hours before each V-2 firing are required to insure the success of the program. The forecasts have the following purposes: The 72-hour forecast is for the necessary planning and set-up of the further explained the general use of the radar equipment at the base was tracking of rockets fired from the mother-base at the White Sands Proving Grounds.

Some of the balloons, of the type shown in the Alamogordo News representatives Wednesday, the commanding officer said, were used to carry at times devices that it was necessary for the group to recover and these were tracked to their destination by B-17's and other aircraft if they soared out of range of the radar equipment. The radar has been successful, he explained, up to 60 miles, while some of the balloon-towed groups have gone as far as Colorado.

Within the past week several groups of Otero county residents have observed from one to four "flying discs" in flight, with their descriptions varying according to height of observation, speed of flight and oscillation of the corner reflectors towed as all of these and other atmospheric changes alter the looks of the objects.

These corner reflectors when packed before attaching to the towing balloons, are about 40 inches across and are a perfect triangle.

The balloon, or balloons, are then attached by a string to the center of this triangle and it then opens into a paper covered by tinfoil with six triangles pointed at the top and braced by strips of wood which ... says present to the radar, and in observing groups one flat shiny surface no matter at which angle viewed.

It is very light and is towed by a synthetic rubber balloon made of neoprene which is tested an hour before use so as to increase its life and resistance to atmospheric conditions.

At times a balloon bursts soon after ascent with the reflector then falling to the earth and at other times the air currents force the balloons down with their burdens.

The balloons the blood four feet in diameter and light colored.

Comparison of the local corner reflector training device with scores of those recovered near Corona recently and picked up at other points the last several months hold a striking similarity.

Experiments, the experimental group from the proving grounds said, showed the early morning hours of from five to six to be the most successful to gain the 30 to 60-thousand feet altitudes attained by the device. They also explained the ordinary flight course of these experiments was from the base to the Sacramento Mountains north of Alamogordo and thence along the "mountain range on north. Others have, the group said, soared

News Men Watch Army Radar Crew Launch "Disc"

Local "flying discs", and possibly those throughout the nation, summered down to balloon-piloted observation radar targets loosed from the Alamogordo Army Air Base and related bases throughout the nation.

Those observed over Otero county were loosed from the metallurgy of the local air base under the direction of Major W. D. Pritchard of the Watson Laboratories AMC experimental group for long range radar detection, or from the other White Sands Proving Ground and related groups.

On invitation of Major Pritchard members of the Alamogordo News staff took pictures of the balloons and trailing angular cornered reflectors covered with tinfoil as they were prepared to be sent aloft and after their release on Wednesday, July 9 at 1 p. m.

The same group observed the flight of the balloons and trailing observation reflectors for, approximately one hour until one balloon burst over the foothills of the Sacramento Mountains, southeast of Alamogordo, and the consequent descent of the device, known by rumor as the "flying disc" of this area, until it grounded about 200 feet from highway 70 southeast of Alamogordo.

In flight the reflectors and their towing balloons climbed by stages in the mid-day hot air currents and at times oscillated any appeared to the eye-sight as of various shapes, with the reflectors losing their identity as they changed.

The towing balloons, however, remained identified throughout the seven to ten-mile flight and were observed by motor-operated tracking sights, field-glass and radar contact with the reflectors.

Major Pritchard, who issued the invitation to the press group to visit and view the widely-discussed and reported ascent of the corner reflector device, explained the object, the study and training of officers and enlisted men of the army in observing and tracking of objects slower than airplanes by eye and radar device.

The corner reflectors being periodically released for this purpose, he explained, and had been for the past fifteen months from this local headquarters of the AMC under the Watson Laboratories group, who have headquarters at Red Bank, New Jersey.

Major Pritchard and his fellow officers, Major C. M. Mangum, Captain L. H. Dyrad and Lt. S. W. Seigel, he explained, "had not realized that our balloon and corner reflector radar experimental device was in any way related to the widely-discussed 'flying disc' ob-

Seventy Youngsters Out For Classes

Seventy youngsters of Alamogordo responded to the call for free swimming lessons this week to make this the most popular of summer recreational sports under the school-community center sponsored activities.

The softball league play continued hot and fast with the Lions trimming the Rotary Juniors 15 to 13 and the Alamo Ices dropping their game with the Junior Men's Store nine, 10 to 7. Three 4 teams play every Monday night.

Another teen-agers party will be held at the Alamogordo Community Center Friday evening with an orchestra lined up for the dancing.

Final activities of the Community Center program for this week will be the Center benefit on July 12, Saturday night, with Manny Duran's orchestra furnishing the music.

Race Funs May See Top Quarter Nags In Matches Sunday

A matched race of two top quarter horses in this section, to be run here Sunday, June 13, has grown out of the ten day meet which ended last Sunday at Hollywood Park, Ruidoso.

For a stake of $1000, $500 posted by the two owners, Hustling Girl, under the registered ownership of O. C. Mathews of Silver City will hustle along the 220 yard course in an effort to beat Punkin, Lloyd Churchill's sprinter, to the finish.

Punkin has been out to pasture, and is reputedly not in top condition, while Hustling Girl has just completed the ten days of intensive training at Ruidoso. Ordinarily, the favors in wagers would go to Punkin, but now, we dunno. Might be anyone's race.

Among the others at the local stalls, ready to dash at a word from their owners, are D. H. Crumley's 'Big Sandy', W. J. Culbertson's 'Tuny', W. J. Harris' 'Nigger Baby'; and Woody Kirkpatrick's 'Wendy'.

The sweaters at Sunday's will probably have a chance to coax a coin or the hat to make up the track expense of running the races.

'Sid Searcy Night' To Be All-Star Softball Classic

Alamogordo softballers will play a softball game on July 16 under the lights dedicated to the late Sid Searcy, during his lifetime an ardent fan and faithful official of softball play here, with the all-stars from the local league against the Cliffedge Enterprises team of El Paso.

The El Paso team will be fairly stronger than the local nine at the present time, but the faithful of Otero County will be on hand in droves for this game and in back of their county-wide nine.

This will probably be the hardest played game of the season under

Quimby Looks Over Workshop Systems To Get Start Here

Dr. Neal F. Quimby, superintendent of the New Mexico School for Blind, left Sunday for eastern points, and this week is observing operations of a workshop for blind persons in Baltimore, Md. He will also visit Philadelphia, Pittsburgh and other cities making observations of workshops there.

Dr. Quimby is making his survey with the view of designing a workshop for blind to be built in Alamogordo. His observations will be used in making recommendations to architects in designing the building, and in setting up teaching methods and providing equipment for the workshop here.

The regents of the N. M. School for Blind have negotiated with A. C. and Fulton Robinson for five lots in Block 8, on Pennsylvania Ave., as a site for the workshop. The institution will be a branch of the N. M. School for Blind, and will be built and equipped at an estimated total cost of $60,000.

Blind persons to be trained in the workshop here, which is expected to be completed either this year or early next year, will number 100, and will be certified clients of the State Department of Public Welfare, or of any other state or national agency giving assistance to blind persons. Trainees of the Veterans Administration may receive training here.

At the present time, over 250 blind adults in the state are receiving assistance from the State Department of Public Welfare, on the basis of need. These persons will be given an opportunity to make themselves self sustaining in whole or in part, through training in the workshop.

In addition to these, Dr. Quimby has announced, from information gathered by the School, some 2 veterans of the last war are now blind and in need of training, and the eyesight of some 20 to 40 more is threatened because of prison camp diseases.

C. of C. Report

The schedule of meeting of the Otero County Fair finance committee for Tuesday night has been postponed until Friday, July 18, at 7:30 p. m. at the Town office.

The C of C is asking the cooperation of all of the C of C's in this area to assist by writing letters to Enterprise Studios and Harr-Sherman Production Co., in an effort to get the premier of "They Passed By Here" shown in Alamogordo.

The first known response to this request has come from Chris P. Pre, manager of the El Paso C of C. He has written a very strong letter along this line to the Enterprise Pioneers in which he assures the officials there that Alamogordo is a "natural" as the location for showing the premier, that the people of Alamogordo will cooperate in every way to make the premier here a success, and that they will receive the greatest cooperation from the people of El Paso and s...